



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,084	11/17/2003	Kia Silverbrook	ZF199US	8568
24011	7590	12/14/2004	EXAMINER	
SILVERBROOK RESEARCH PTY LTD 393 DARLING STREET BALMAIN, 2041 AUSTRALIA			GORDON, RAQUEL YVETTE	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,084

Applicant(s)

SILVERBROOK, KIA

Examiner

Raquel Y. Gordon

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/401987
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/17/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-4 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6832828.

US Patent No. 6832828 teaches every element of the instant claims including:

1. A micro-electromechanical device which comprises a substrate containing drive circuitry; and an elongate actuator that is fast with the substrate at a fixed end, **the elongate actuator having a laminated structure of at least one inner layer and a pair of opposed, outer layers, the outer layers having substantially the same thermal expansion and elasticity characteristics,** with one of the outer layers defining an electrical heating circuit that is in electrical contact with **the drive circuitry to be heated and to expand on receipt of an electrical signal from the drive circuitry and to cool and**

Art Unit: 2853

contract on termination of the signal, thereby to generate reciprocal movement of the actuator (claim 1).

2. A device as claimed in claim 1, in which the actuator has a single inner layer (metal layer as recited in claim 2).

4. A micro-electromechanical device which comprises a substrate containing drive circuitry; and a plurality of elongate actuators, each actuator being fast with the substrate at a fixed end, **each elongate actuator having a laminated structure of at least three layers in the form of a pair of opposed, outer layers and at least one inner layer, the outer layers having substantially the same thermal expansion and elasticity characteristics**, with one of the outer layers defining an electrical heating circuit that is in electrical contact with **the drive circuitry to be heated and to expand on receipt of an electrical signal from the drive circuitry and to cool and contract on termination of the signal, thereby to generate reciprocal movement of the actuator (claim 1).**

However, US Patent No. 6832828 does not explicitly teach the differences of:

“each elongate actuator having a laminated structure of at least three layers in the form of a pair of opposed, outer layers and at least one inner layer, the outer layers having substantially the same thermal expansion and elasticity characteristics,” as recited in instant claim 1; and

“the drive circuitry to be heated and to expand on receipt of an electrical signal from the drive circuitry and to cool and contract on termination of the signal, thereby to generate reciprocal movement of the actuator,” as recited in instant claim 1; and

“a device as claimed in claim 1, in which the outer layers have a higher coefficient of thermal expansion than the inner layer,” as recited in instant claim 3.

Nevertheless, although the conflicting claims are not identical, they are not patentably distinct from each other because US Patent No. 6832828 recites a second metal layer that is positioned so that the dielectric layer is interposed between the metal layers, said second metal layer being substantially the same as the first metal layer. One of ordinary skill in the art would have viewed the claimed inner layer to be the same feature as the dielectric layer taught by US Patent No. 6832828. Further one of ordinary skill in the art would have viewed the first and second metal taught by US Patent No. 6832828 as the same elements as the outer layers claimed since the first and second metal layers sandwich the “inner” dielectric layer, and have the same coefficient of thermal expansion similarly as claimed. Hence, at the time of the invention, one of ordinary skill would have viewed **“each elongate actuator having a laminated structure of at least three layers in the form of a pair of opposed, outer layers and at least one inner layer, the outer layers having substantially the same thermal expansion and elasticity characteristics,” “each elongate actuator having a laminated structure of at least three layers in the form of**

Art Unit: 2853

a pair of opposed, outer layers and at least one inner layer, the outer layers having substantially the same thermal expansion and elasticity characteristics,” sufficiently taught by US Patent No. 6832828, and therefore, not patentably distinct.

Further, one of ordinary skill at the time the invention was made would have known the drive circuitry, as claimed was not patentably distinct from US Patent No. 6832828. US Patent No. 6832828 teaches “a control logic circuitry positioned on the substrate along an elongate region defined on the substrate and interposed between the actuator arm and the substrate, the control logic circuitry being connected to the heating circuit to enable and disable the power supply according to a control signal received by the control logic circuitry.” Hence, is obvious the control logic circuitry recited in claim 1, lines 25-30 sufficiently teach the same arm displacement by thermal actuation force, similarly to the claims, and is not patentably distinct.

Furthermore, with regard to instant claim 3, US Patent No. 6832828 teaches a second metal layer that is positioned so that the dielectric layer is interposed between the metal layers, said second metal layer being substantially the same as the first metal layer.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it would be obvious to one of ordinary skill in the art at the time the invention was made a second and or first metal layer (i.e. outer layers) would have a higher coefficient of thermal expansion than the dielectric layer it is sandwiched between (see claims 1, 2, and 3).

Art Unit: 2853

It would have obvious to one of ordinary skill at the time the invention was made to modify US Patent No. 6832828, by the aforementioned teaches for the purpose of optimally fluid ejection, as taught by US Patent No. 6832828.

Contact Information

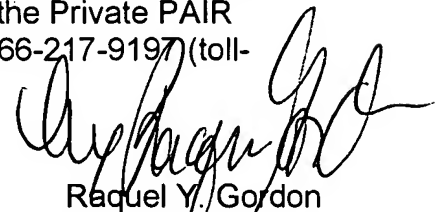
Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Raquel Y. Gordon, whose telephone number is (571) 272-2145. The Examiner can normally be reached on M Tu Th and F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. A fax number is available upon request.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the Examiner or Supervisor.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raquel Y. Gordon
Primary Examiner
Art Unit 2853
December 9, 2004

**RAQUEL GORDON
PRIMARY EXAMINER**